ocular and the small plane mirror round the axis of the tube by a very simple process. The reason of this arrangement is to facilitate the use of the large iron winding staircase. This enormous metallic structure is moved by special machinery on two circular iron rails. It is always placed on the same side of the tube as the counterpoise, which would render observations impossible if the ocular and seeker were not rotated round the axis of the tube. The height of the iron staircase is about twelve metres, and its weight six tons. The observations are made in open air, and when the weather is propitious the cabin protecting the apparatus is removed by machinery. It is an iron casement (weight twelve tons), moveable on rails. In less than a quarter of an hour the telescope can be directed on any object, however minute.

The clock is finished, but not adjusted. The machinery for moving in right ascension is finished and works admirably. The handle and screws for minute motions in declination are finished and working most nicely. So does the gear for connecting and disconnecting the tube with the clock.

The cost of the reflector is 8,000*l.* It was built in six years, but the work was interrupted several times, first by the dismissal of M. Leverrier, secondly by the war and the Commune.

M. Leverrier is justly proud of having completed the large refractor, to which a very few details only are wanting—the adjustment of the clock, the handles for slight equatorial motions, and the machinery for large declination motions. He asked M. Wallon to give orders for the construction of the large refractor, and it was granted at once. A sum of 8,000*l.* has been already voted by the National Assembly for that purpose. It will be seventeen metres in length, and the construction will be completed in three years, if the work is not interrupted by any political or other commotion.

LIEUT. WEYPRECHT ON ARCTIC EXPLORATION

We have already (vol. xii. p. 460) referred to Lieut. Weyprecht's paper on the Principles of Arctic Exploration, read at the German Scientific and Medical Association. A full report of the paper has now come to hand. Lieut. Weyprecht rightly maintains that the polar regions offer, in certain important respects, greater advantages than any other part of the globe for the observations of natural phenomena—magnetism, the aurora, meteorology, geology, zoology, and botany. He shows that hitherto immense sums have been spent and much hardship suffered for the mere purpose of extending geographical and topographical knowledge, while strictly scientific observations were regarded as holding only a secondary place. While admitting the importance of geographical discovery, he maintains that the main purpose of future Arctic expeditions should be the extension of our knowledge of the various natural phenomena which may be studied with so great advantage in these regions.

After showing in some detail the kind of observations which would yield valuable results, Lieut. Weyprecht lays down the following general propositions:—1. Arctic exploration is of the highest importance to a knowledge of the laws of nature. 2. Geographical discovery in these regions is of superior importance only in so far as it extends the field for scientific investigation in its strict sense. 3. Minute Arctic topography is of secondary importance. 4. The geographical pole has for science no greater significance than any other point in high latitude. 5. Observation-stations are to be selected without reference to the latitude, on account of the advantages they offer for the investigation of the phenomena to be studied. 6. Interrupted series of observations have only a relative value.

Suppose that stations were established at Novaya Zemlya, 76°; Spitzbergen, 80°; West or East Greenland, 76°-80°; N. America east of Behring Strait, 70°; Siberia at the mouth of the Lena, 70°, there would thus be a girdle of observatories around the entire Arctic region. A station in the neighbourhood of the centre of magnetic intensity is much to be desired. By means of the stations already existing in the neighbourhood of the polar circle, a connection would be established with our own region. The cost of one geographical exploring expedition would supply the means of keeping up these stations for a year. The object of these expeditions would be, with similar instruments and according to similar instructions, to record simultaneous observations as far as possible throughout a year. In the first line would be placed the various branches of Physics and Meteorology, as also Botany, Zoology, and Geology; and first in the second line, detailed geographical exploration. Were it possible to establish stations for simultaneous observation in the Antarctic regions, results of much higher value might be expected. Were the cost of these yearly expeditions divided among various countries, it would fall very lightly upon each.

While we think the curiosity of a healthy kind which seeks to know the configuration of the entire surface of our globe, we are sure every man of science will admit the value of Lieut. Weyprecht's propositions. There has, without doubt, been hitherto too much weight attached to merely reaching a high latitude, and too little provision made for strictly scientific observation. Lieut. Weyprecht's suggestions deserve the serious consideration of all civilised countries; were they adopted as a ground for action, a new era in polar exploration would be begun, and results of far higher value than any hitherto obtained might with certainty be expected.

NOTES

It is rather disappointing that Capt. Young's Arctic Expedition in the *Pandora*, which arrived at Portsmouth on Saturday, should have returned home prematurely without accomplishing any part of the work for which it was organised—the discovery of additional Franklin relics and the complete navigation of the North-west Passage. Under the circumstances, however, Capt. Young has adopted the wisest possible course. Better that the expedition should spend a comfortable winter at home, and set out early next year to renew the attempt in which they have just been baffled. Disco was reached on August 7, Upernivik on the 13th, and Cape York on the 16th, after a splendid passage through the much-dreaded Melville Bay. Carey Islands were visited to deposit letters for the *Alert* and *Discovery* and to obtain a despatch from Capt. Nares, as previously agreed on. The despatch, however, was not discovered till the return voyage. From Carey Islands the *Pandora* proceeded up Lancaster Sound to Beechey Island, which was reached on the 26th. Here Capt. Young inspected "Northumberland House," which was built as a storehouse by the *North Star* (Capt. Saunders) in 1850. It was found that the house had been broken into by bears, and many of the stores damaged, but those in casks and barrels had sustained scarcely any injury. The yacht *Mary* and two life-boats left by Sir John Ross were in such good condition that, with a few repairs, they could still be made seaworthy. After putting the stores in order, Capt. Young proceeded up Peel Strait for the purpose of reaching King William Land. After considerable manœuvring with the ice, and some difficulties arising from the uselessness of the compasses so near the magnetic pole, La Roquette Island, near Bellot Strait, was reached on August 30. The ground thus far gone over was pretty well known from the explorations of previous expeditions, and Capt. Young was close to his former encampments when travelling from the *Fox* in 1859. But now an impenetrable pack of ice across the channel barred all further progress, and after vainly trying to find a passage, Capt. Young prudently determined to retreat, which he did on Sept. 3. Carey Islands were reached on Sept. 11, and Capt. Nares' record discovered. The *Pandora* arrived at Disco on the 20th, passed Cape Farewell on Oct. 2, and, as we have said, reached Portsmouth on Saturday. Both on the outward and return voyage very rough weather was encountered, although after leaving Disco until Bellot Strait was reached, the weather was on the whole very favourable. The following is Capt. Nares' record referred to:—"H.M.S. *Alert*, at Carey Islands, 3 A.M., 27th July, 1875.—*Alert* and *Discovery* arrived here at midnight, and will leave at 6 A.M. for Smith's Sound, after depositing a depot of provisions and a boat. We left Upernivik on the evening of the 22nd inst., and Brown Islands on the evening of the 23rd. Passing through the middle ice during a calm, we arrived at Cape York on the 25th inst. The season is a very open one, and we have every prospect of attaining a high latitude. All are well on board each ship." Thus the latest news from our Arctic Expedition is entirely favourable.

Two long letters from Mr. Stanley, the leader of the *Daily Telegraph* and *New York Herald* African Expedition, appear in the *Telegraph* of Friday and Monday last. As might be expected, they are full of interest, and contain many geographical details, too summarily stated, however, to be condensed intelligibly, or appreciated without a special map. Such a map Mr. Stanley seems to have sent home, and we hope it will be published as soon as practicable. Both letters are written from the "village of Kagehyi, district of Uchambi, country of Usukuma, on the Victoria Niyanza" (so he spells the name), dated March 1 and May 15 respectively. An intervening letter has not come to hand. The lake was reached after a march of 720 miles from the coast, in 103 days. That the expedition has had to encounter more than the usual difficulties and hardships of African exploration may be inferred from the fact that Stanley has lost considerably more than half his men, including two of his white companions, Frederick Barker and Edward Pocock. Disease carried off the greater number, though many were lost in a fierce fight with the Waturu, a people of the Leewumbu Valley. The principal additions to our knowledge made so far by the determined leader of the expedition is a pretty full account of the country and the people from Western Ugogo northwards to Nyanza, and a survey of over 1,000 miles of the shores of the lake, which apparently is studded with islands. The Shemeeyu River, known by other names in the upper part of its course, which Stanley seems mainly to have followed, and which he regards as the chief tributary of the Nyanza, enters the lake at the village of Kagehyi. Stanley calculates its length roughly at 350 miles. At 400 miles from the coast he came upon the base of the watershed of a number of streams which feed the river, and which he evidently regards as at least one of the Nile sources. According to Stanley's observations, and they seem to have been carefully made, as computed by Capt. George, the height of the Nyanza above sea-level is 3,740 feet—68 feet higher than Speke made it out to be. He has made some other corrections on Speke's observations, especially in the matter of latitude. Speke he makes out to be fourteen miles wrong in his latitude along the whole of the coast of Uganda. The mouth of the Katonga, for example, which in his map is a little south of the equator, Stanley makes by meridian altitude to be in N. lat. 0° 16′. We sincerely hope the indomitable leader of this expedition will be able successfully to accomplish the large task he has set before him—the exploration of the whole of the lake region of Central Africa.

PROF. FAWCETT'S address at the opening of the winter session of the Birmingham and Midland Institute on Monday was, as might be expected, instructive and impressive. The tone of it was mainly that of our article last week on the Yorkshire College of Science, that the object of education should be to develop an intelligence which will be cultured all round, and which may be applied to any work in life. Prof. Fawcett spoke mainly of elementary education and of the education which the working classes may obtain in such an institution as the Birmingham and Midland. He advocated the study of botany and political economy from a disciplinary and practical point of view, and very properly discouraged the notion that a good education ought necessarily to make anyone discontented with his position; it would simply dignify labour of all kinds, and make the life of the artisan brighter and nobler. A somewhat similar tone as to what middle-class education should be, and what a college or middle-class school should be, pervaded the address of the Dean of Durham at the opening of the fifth session of the Newcastle College of Science. In an efficient curriculum science will find its proper place, withal a place of the highest importance.

THE Organising Committee for the International Exhibition of Electricity has held its first general meeting at the Palais de l'Industrie, Paris, under the presidency of Colonel Laussedat, one of the delegates appointed by the French Minister of War. The committee approved the regulations proposed by Count Halley d'Arroz, the originator of the scheme, appointed him general director, and divided the exhibition into eighteen groups. Amongst these are the History of Electricity, a section in which will be collected, as far as possible, the instruments which were used by Davy, Faraday, Volta, Arago, Ohm, Oerstedt, Ampère, and others, in making their discoveries. The eighteenth group will be Bibliographical; a library as complete as possible will be formed of all the books and papers published in the Transactions of the several Academies, and scientific periodicals relating to electricity. A requisition will be sent to the administration of the National Library, asking them to offer, for 1877, their Systematic Catalogue of Electricity. The President of the French Republic will be the head of the Committee of Patronage, and a sub-committee has received instructions to open negotiations with foreign *savants* and Governments.

THE catalogues of the various departments under the Science and Art Department at South Kensington have long been noted both for the extent and accuracy of the information contained in them, as well as for the low price at which they may be obtained. It is with pleasure we note that the catalogues of the contents of the Bethnal Green branch are not behind those of the mother institution in point of detail and careful working out. That relating to the special collection of waste products brought together by Mr. P. L. Simmonds is before us, and we recommend all those who are interested in the subject to obtain this little book, which costs only threepence and contains a fund of information on various matters connected with products of the vegetable, animal, and mineral kingdoms. The usual sequence of the three kingdoms of nature is somewhat altered here, the vegetable products being placed first, and for this reason, that "vegetable products have given more extensive and profitable employment and results, in the utilisation of formerly wasted substances and the recovery of residues from manufactures, than either animal or mineral substances." Nothing is too small or unimportant to rescue from simple destruction if it can be turned in any way to serve the purpose of man. As an illustration we may mention the fact of the application as fire-lighters of the central portion of the ear of the Indian corn after the seeds have been taken out; also of the cones of the Scotch Fir (*Pinus sylvestris*), which are sold in France under the name of *Allumettes des Landes*. These are novel applications of what would otherwise be pure waste substances; but there are others which, though waste from one manufacture, are used to adulterate others. From vegetable marrow, melon, and other cucurbitaceous seeds, many of the so-called sugared almonds of the confectioners are made. In China, the seeds of the water-melon are very largely used as food; they are carried from place to place in junks laden entirely with them; they contain a quantity of oil of a sweet or bland nature. In the manufacture of olive oil, much more economy is exercised than was formerly the case. In the olive-growing countries the pulpy portion of the fruit, which was formerly thrown away after being pressed, is now bought up at the rate of from thirteen to sixteen shillings per ton, and submitted to chemical action and powerful steam pressure, by which means about twenty per cent. more oil is obtained. This oil is of course of an inferior quality to that obtained from the first expression. After this remaining oil is extracted, the seeds, which are crushed in the process, are finally burnt as fuel or used as manure. The foregoing notes will show the kind of matter dealt with in the Official Catalogue of Waste products.

FROM the Report, dated June 1875, of Mr. George King, Superintendent of the Calcutta Botanical Gardens, we see that during the past year many important improvements have been effected in the Gardens. Among other things a fine raised terrace has been constructed, on which a large new plant-house is now being erected. This noble conservatory, when finished, will, it is expected, be the greatest addition to the Garden which has been made for years, and will give facilities for the cultivation of delicate plants hitherto unknown in Calcutta. This building is 200 feet in length by 66 feet broad. The collections in the two orchid houses and in the other conservatories have been much increased during the year, considerable additions having been received from Sikkim, the Khasi Hills, the Andamans, and Burmah, also a few plants from the Neilgherries. A number of plants were also sent to the Garden by Mr. Lister, the second gardener, who accompanied the Duffla field-force as a botanical collector. "But," Mr. King justly remarks, in reference to this, "when the floral wealth of Assam, of Eastern Bengal, and of Burmah is considered, not to mention the west and south of India, the collection in this Garden appears miserably small. In an imperial institution such as this, the natural productions of the whole Indian empire should, as far as the climate will permit, be represented. I see no way of forming such a typical collection until a good trained European collector be attached permanently to the establishment. At present I have to rely for supplies of plants from distant parts of India on correspondence with private parties, who, although usually very willing to help, are unfortunately often unskilled in botany or gardening, and neither know what plants to send nor how to pack them safely for transit. The only experts, not employed in the Garden, whose services I can command for collecting, are the manager of the Cinchona plantation and his assistants, and their efforts are of course confined to Sikkim. Had I a collector as one of the regular garden staff, I could send him about to distant districts of which the flora is little known or poorly represented in the Garden, and the result would be that in a few years a very fine collection might be got together both of living plants in cultivation and of dried specimens in the Herbarium. Another great advantage would be that this Garden would be put in a position such as it has not hitherto occupied for exchanging plants with similar institutions all over the world. The cost of maintaining such a collector would not be great, and the extremely liberal manner in which the Gardens have been supported by Government during the past year leads me to hope that this desideratum will soon be supplied."

THERE is being printed for the National Library of Paris two volumes of catalogues of French History. The series will be completed in fourteen volumes. There are also being printed two new volumes of the catalogue of Medicine, containing all the thèses supported before the several French schools for a number of years. These two volumes will make the catalogue of Medicine complete in four volumes.

WE learn from the *Journal of Botany* that Prof. Kerner, o Innsbrück—to whose valuable contributions to botanical literature we have frequently called attention, especially relating to the distribution of plants as affected by climatal and geological conditions—will shortly succeed the venerable Fenzl as Professor of Botany at the University of Vienna.

A PAPER by Dr. T. Spencer Cobbold has been reprinted from the *Veterinarian* of this month, on the destruction of elephants by parasites, with remarks on two new species of entozoa, and on the so-called earth-eating habits of elephants and horses in India.

MR. SCLATER has issued an appendix to his "Revised List of the Vertebrated Animals in the Zoological Gardens," containing the names of the additions since the year 1871, among the most important of which are the superb series of Rhinoceroses, five species in all; the Chinese Water Deer of Swinhoe; the Mourning Kangaroo; the Red Oven-bird; Bouquet's Amazon, and three fresh species of Cassowary.

THE principal papers in this month's part of Petermann's *Mittheilungen* are: An account of a journey to Patagonia, by Dr. Karl Berg, of the Public Museum of Buenos Ayres, in which particular attention is given to the natural history of the country; "Chinese Travellers of the Middle Ages to Western Asia," by Dr. E. Bretschneider, of Pekin; "Travels on the Araguaya, Brazil, in January 1865," by Dr. Conto de Magalhães; "Contributions to a Knowledge of the Oasis El-Chargeh," with a map, by Dr. G. Schweinfurth; and a short paper, with map, on Weyprecht's survey of the North Coast of Novaya Zemlya in September and October 1872.

THE *Bulletin* of the French Geographical Society for September contains a careful paper by M. Jules Girard on the Elevations and Depressions which have been observed along the coast of France. This part also contains the conclusion of the Abbé Petitot's valuable contribution to the Geography of the Athabaskaw-Mackenzie region of North America, and a paper by M. E. Allain on the Statistics of Brazil.

THE French Government is sending to China a doctor, M. Durand Fardel, in order to study the important question of contagious diseases, and to elucidate the so much vexed question of quarantines.

IN the Health Section of the Social Science Congress, Prof. Wanklyn read a paper on the waters of the Nile, showing the amounts of chlorine and of hardness at different periods. The rise of the Nile commences at the end of May, and lasts through June, July, and August, up to about the middle of September, when the decrease continues till Christmas. From Christmas till May the amount is tolerably constant. Just at the time of the beginning of the rise of the waters the chlorine is 1·8 grains per gallon, but at the time when the Nile has attained its greatest size it is only 0·3 gr., and it remains very little above that proportion to the end of the year. In marked contrast with the variableness of the chlorine is the constancy of the hardness. Prof. Wanklyn's explanation is that the storm-water which adds so much to the bulk of the Nile sweeps over the country without penetrating far below the surface, and such water passing over a country long ago denuded of salt could convey but little chlorine. He thinks that the débris carried down mechanically by the flood-water contains abundance of finely divided carbonate of lime, so that the storm-water would always be saturated by carbonate of lime. Hence the constant hardness. The water which feeds the Nile, apart from the storm-water, contains 1·8 grains per gallon; and it is the accession of storm-water with chlorine that causes the relative reduction. Similar features will probably be found in other large rivers which have a flood period.

During the meeting of the Social Science Congress at Brighton, Mr. Booth threw open for three days his private museum which is in the course of arrangement. He has built on the Dyke Road a spacious hall of brick, lighted entirely from above, and around this are being placed 306 cases which contain groups of birds shot by himself and Mrs. Booth in Britain. There is one point about the fixing of the cases worth mentioning. A framework is constructed about three feet from the wall into which the glazed cases fit. This prevents any damp from the walls, too frequent in museums, and allows of the easy moving of the cases if needed. As these cases are arranged in three tiers only and there is abundance of light, every bird can be well seen, and the width of the hall is sufficient to admit of viewing the groups from different positions. The most important feature next perhaps to the careful stuffing of the birds, is the fidelity with which the characters of the habitat are reproduced. With birds which change their plumage during the year, two, and where needed, three illustrations are given each with the proper *entourage*. As a collection illustrating our British birds in their native haunts, this is probably unique. There is no attempt at zoological classification, however, since the position of the cases is influenced rather by their relative size and the general picturesque effect of the hall. Whoever the taxidermist is, the collection does him great credit. It is stated that when complete the collection will be thrown open to the public for the benefit of the local charities.

The observations obtained by Prof. Violle (referred to last week, p. 527) in reference to the solar temperature, were obtained not by ballooning, but by the actual ascent of the Alps.

Under date Oct. 19, the *Times* Paris correspondent states that an earthquake which lasted several seconds is reported as having been felt at Moutiers-et-Brides-les-Bains, near Chambery. This phenomenon coincided with great barometrical depression. Snow has fallen on the mountains of the Puy de Dôme.

Dr. Pietre Sancta has just started a new French periodical, the *Journal d'Hygiène*, with the object of realising, as far as possible, in France the ideal of a "city of health." The journal also treats of climatology, mineral waters, wintering and seaside resorts, and kindred subjects.

The pair of Sea-lions which arrived at Brighton last week are, we are informed, specimens of Steller's Sea-lion, about six feet long. The species, which was originally described by G. W. Steller in a work which also contains the account of the huge extinct Manatee-like Rhytina, attains a length of sixteen feet, and has long hair surrounding the neck of the adult male, whence its name. Its under-fur is very little in quantity, so that the skin is of no use for "sealskin."

On Monday the New Ladies' College, known as Newnham Hall, at the back of the Colleges at Cambridge, was formally opened and received into its rooms twenty-seven students. The resident mistress is Miss Clough, the sister of the poet.

A letter in Tuesday's *Times* describes a terrible hurricane and rain and thunder-storm which swept over the island of St. Vincent and other West India islands on the 9th September. In twelve hours the almost incredible quantity of nearly nineteen inches of rain fell.

A course of twelve Gilchrist Lectures, on the Principles of Physical Geography, in connection with the School Teachers' Science Association, is being given at the Foresters' Hall, Wilderness Row, on alternate Friday evenings. The first lecture was given on the 8th inst., and the next will take place tomorrow. The lecturers are Dr. W. B. Carpenter, F.R.S., Mr. J. Norman Lockyer, F.R.S., and Prof. Martin Duncan, F.R.S.

The evening lectures last session in connection with the Yorkshire College of Science were largely attended, and we are glad to see they are to be continued this session. Professors Rucker, Thorpe, and Green are to lecture on special departments of Physics, Chemistry, and Geology respectively, and Mr. L. C. Miall on "The Principal Forms of Animal Life."

The following is the programme of the Glasgow Science Lectures Association for the coming Session:—Nov. 11, "Navigation," by Sir Wm. Thomson, F.R.S.; Nov. 24, "Coals and Coal Plants," by Prof. W. C. Williamson, F.R.S.; Dec. 8, "Recent Researches into the Chemical Constitution of the Sun," by J. Norman Lockyer, F.R.S.; Dec. 22, "Kent's Cavern—its testimony to the Antiquity of Man," by Wm. Pengelly, F.R.S.; Jan. 27, "Mountain Architecture," by Prof. Geikie, F.R.S.; Feb. 16, a lecture by Prof. Huxley, F.R.S., subject not yet announced.

From the thirteenth quarterly report of the Sub-Wealden Exploration, it appears that another effort is to be made to reach a depth of 2,000 feet. The engineer has reported favourably on the possibility of completing that distance by attaching a crown to the 3-inch tubes, and, after boring to 1,824 feet, to recommence with a $2\frac{1}{2}$-inch crown.

The additions to the Zoological Society's Gardens during the past week include two Persian Gazelles (*Gazella subgutturosa*) from Persia, presented by Mr. Archibald Gray; a Ruddy Ichneumon (*Herpestes smithii*) from India, presented by Mr. W. R. Best; a Common Kestrel (*Tinnunculus alaudarius*), European, presented by Mr. J. H. Willmore; a Golden-crowned Conure (*Conurus aureus*) from S.E. Brazil, presented by Col. McArthur; two Crested Porcupines (*Hystrix cristata*), two Servals (*Felis serval*) from S. Africa, a Scarlet Ibis (*Ibis rubra*) from Para, a Common Boa (*Boa constrictor*) from S. America, deposited; a Derbian Wallaby (*Halmaturus derbianus*) born in the Gardens.

A CITY OF HEALTH*

II.

The warming and ventilation of the houses is carried out by a common and simple plan. The cheerfulness of the fireside is not sacrificed; there is still the open grate in every room, but at the back of the fire-stove there is an air-box or case which, distinct from the chimney, communicates by an opening with the outer air, and by another opening with the room. When the fire in the room heats the iron receptacle, fresh air is brought in from without, and is diffused into the room at the upper part on a plan similar to that devised by Capt. Galton.

As each house is complete within itself in all its arrangements, those disfigurements called back premises are not required. There is a wide space consequently between the back fronts of all houses, which space is, in every instance, turned into a garden square, kept in neat order, ornamented with flowers and trees, and furnished with playgrounds for children, young and old.

The houses being built on arched subways, great convenience exists for conveying sewage from, and for conducting water and gas into, the different domiciles. All pipes are conveyed along the subways, and enter each house from beneath. Thus the mains of the water-pipe and the mains of the gas are within instant control on the first floor of the building, and a leakage from either can be immediately prevented. The officers who supply the commodities of gas and water have admission to the subways, and find it most easy and economical to keep all that is under their charge in perfect repair. The sewers of the houses run along the floors of the subways, and are built in brick. They empty into three cross main sewers. They are trapped for each house, and as the water supply is continuous, they are kept well flushed. In addition to the house flushings there are special openings into the sewers by which, at any time, under the direction of the sanitary officer, an independent flushing can be carried out. The sewers are ventilated into tall shafts from the mains by means of a pneumatic engine.

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* An Address by Dr. B W. Richardson, F.R.S., at the Brighton meeting of the Social Science Association. Revised by the author. Concluded from p. 525.